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William E. Lewis
Ryan, Mason & Lewis, LLP
90 Forest Avenue
Locust Valley, NY 11560

EXAMINER

SMITH, CAROLYN L

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| ART UNIT | PAPER NUMBER |
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1631

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/783,807

Applicant(s)

SHIBUYA, TETSUO

Examiner

Carolyn L. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 4-7, 10-12, 15-16, 18-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 8, 9, 13, 14 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's amendments and remarks, filed 3/28/07, are acknowledged. Amended claims 1-3, 8-9, 13-14, and 17 are acknowledged. Claims 4-7, 10-12, 15-16, and 18-19 remain withdrawn from consideration as being drawn to non-elected Groups.

Applicant's arguments, filed 3/28/07, have been fully considered but they are not deemed to be persuasive. Rejections and/or objections not reiterated from the previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Claims 1-3, 8-9, 13-14, and 17 are herein under examination.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. This rejection is maintained and reiterated for reasons of record.

Under the Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility (published in the O.G. notice (1300 OG 142) on 11/22/2005) a method that does not result in a physical transformation of matter MAY be statutory where it recites a concrete, tangible and useful result; i.e. a practical application.

It is noted that claims 13-14 are directed to non-statutory subject matter, because they are directed to a program. A program is non-statutory subject matter regardless of what the program does. Therefore, these claims are not statutory.

Applicant argues he has amended the claims to nullify the 35 USC 101 rejections. This statement is found unpersuasive for claims 13 and 14 because a program is non-statutory subject matter regardless of what the program does.

Claims Rejected Under 35 U.S.C. § 112, Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3, 8-9, 13-14, and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Claim 1 (line 7) recites “evaluating a binding possibility of the target nucleotide sequence data and the complementary sequence data in descending order of edit distance of binding precision” and claims 8, 13, and 17 recite “evaluating a binding possibility of the target nucleotide sequence data and the complementary sequence data in descending order of edit distance of binding precision” which are vague and indefinite. It is unclear what is being evaluated: target sequence data evaluated for a binding possibility with any other entity and complementary sequence data evaluated for a binding possibility with any other entity, or target

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sequence data evaluated for a binding possibility to complementary sequence data. It is unclear what Applicant intends “descending order of edit distance” to mean, particularly since the sequence data do not necessarily contain the sequences themselves. Clarification of these issues via clearer claim wording is requested. Claims 2-3, 9, and 14 are also rejected due to their dependency from claims 1, 8, and 13. This rejection is necessitated by amendment.

Claims 13 and 17 recite the limitation “the result” which lack clear antecedent basis as no such single result was previously mentioned. Clarification of this issue via clearer claim wording is requested. Claim 14 is also rejected due to its dependency from claim 13. This rejection is maintained.

Claims 2, 8, 13, and 17 recite the limitation “maximum acceptable edit distance” and claims 3, 9, and 14 recite “maximum edit distance” which are vague and indefinite. It is unclear what Applicant intends these phrases to mean. Clarification of this issue via clearer claim wording is requested. This rejection is maintained.

Claim 3 recites the limitation “dynamically determining termination of an evaluation” which is vague and indefinite. It is unclear what Applicant intends this phrase to mean. Clarification of this issue via clearer claim wording is requested. This rejection is maintained.

Claims 8 and 17 recite the limitation “from each storing unit” which is vague and indefinite. As there is no previous mention of any unit, it is unclear if Applicant is referring to the storing step on line 4 or line 7 or both of claim 8. A similar issue is present in claim 17. Clarification of this issue via clearer claim wording is requested. Claim 9 is also rejected due its dependency from claim 8. This rejection is maintained.

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Claim 13 (line 3) recites the term “it” which is vague and indefinite. It is unclear if the “it” is referring to the program or the computer system. Clarification of this issue via clearer claim wording is requested. Claim 14 is also rejected due its dependency from claim 13. This rejection is maintained.

Applicant argues that he has amended the claims to more clearly point out and distinctly claim the subject of the invention. This statement is found unpersuasive for the rejections above as these phrases are still considered to be vague and indefinite for the reasons given above.

Claim Rejections – 35 USC §102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 8-9, 13-14, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujimiya et al. (P/N 5,706,498). This rejection is maintained and reiterated for reasons of record.

Fujimiya et al. disclose a computer system, method, program, and computer readable medium for executable screening nucleotide sequences (abstract and Figures 2-4, col. 3, second paragraph, col. 8, first 2 paragraphs; and col. 13, first paragraph), as stated in the preamble of instant claims 1, 8, 13, and 17. Fujimiya et al. disclose storing sequence data of genes including

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target sequence data and key sequence data which exhibit a high degree of similarity (abstract and title and Figure 2 and col. 1, third paragraph; col. 2, fourth paragraph; col. 9, last paragraph) for homology retrieval (col. 2, fourth paragraph) including key memory and target memory (Figure 2) which represent a target and a complementary sequence data storing units, as stated in instant claims 1, 8, 13, and 17. Fujimiya et al. disclose retrieval databases and analyzing and determining the final sequence of bases by extracting a portion of the gene probe bound to a chromosome (col. 2, third paragraph) which represents generating complementary sequence data from a probe sequence that may be bound to the target sequence and storing such data, as stated in instant claims 1, 8, 13, and 17. Fujimiya et al. disclose a dynamic operation unit for determining the degree of similarity between the target data and the key data by utilizing base sequence data of each (abstract), grouping homologous sequences, and retrieving the homologous gene sequence (col. 1, fifth paragraph and col. 2, second paragraph) using dynamic programming for determining the optimal solution as a whole using insertions, deletions, and substitutions for the first to last combinations of data (col. 2, last paragraph, col. 3, third and fourth paragraphs, and Figures 7a and 7b) as well as displaying maximal values of each target data in the order of higher degrees of similarity (col. 23, third paragraph) and probe binding evaluation (col. 2, second and third paragraphs) which represents an evaluation processing unit for evaluating a binding possibility of the target nucleotide sequence data and complementary sequence data in descending order of edit distance of binding precision, as stated in instant claims 1, 8, 13, and 17. Fujimiya et al. disclose preparing a gene probe on the basis of the gene having high retrieval accuracy and analyzing and determining the binding possibility of the probe on the involved gene on a chromosome (col. 2, second and third paragraphs), as stated in

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instant claims 1, 8, 13, and 17. Fujimiya et al. disclose a database and retrieving of sequence data using a sequence similar thereto (col. 1, first paragraph) and probe binding analysis and determination (col. 2, second and third paragraphs) and evaluation processing for a user (col. 23, third paragraph) which represents a storage unit for storing the evaluation result for the user in determining probe binding effectiveness and reliability, as stated in instant claims 1, 8, 13, and 17. Fujimiya et al. disclose using 10 base elements in the sequence data (col. 4, second paragraph) as well as using partial sequences (col. 4, third paragraph). Fujimiya et al. disclose a system including storage of data and a similarity degree whereby the score value at the initial condition is set to zero given the condition in which the maximal length α of the sequence is inserted or lost at one time involving partial sequences as well as setting α to 1 to get a maximal score value (col. 4, last paragraph, and col. 5, and abstract) which represents a maximum edit distance storing unit, as stated in instant claims 2, 8, 13, and 17. Fujimiya et al. disclose setting a maximal value as a score of the node and applied to the origin and subsequent lattice points until finishing the basic operation and determining the wholly optimal disposition of the three routes (col. 5, last paragraph to col. 6, second paragraph) which represents a termination-determining unit determining evaluation carried out over maximal (acceptable) edit distance, as stated in instant claims 3, 9, and 14. Fujimiya et al. disclose a score value of each route is added, including target-side data and key-side data, (col. 5, last paragraph; col. 10; and Figures 7 and 8) which represents reading out each target nucleotide sequence data, complementary sequence data, and each maximum acceptable edit distance, as stated in instant claims 8, 13, and 17. Fujimiya et al. disclose the wholly optimal disposition is determined after the basic operations have been made (col. 6, second paragraph and Figures 3-4 and 6) and an interruption signal

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issued to the microprocessor when the operation is terminated (col. 24, last paragraph) which represents generating a termination signal in response to the determination result, as stated in instant claims 9 and 14. Fujimiya et al. disclose using the ability to apply dynamic programming to a local region having approximately 16 bases (col. 7, fourth paragraph).

Thus, Fujimiya et al. anticipate the instant invention.

Applicant summarizes Fujimiya et al. and argues that Fujimiya et al. fail to disclose the evaluation of a binding possibility of target nucleotide sequence data and complementary sequence data in descending order of edit distance of binding precision to determine a binding possibility of a probe nucleotide sequence to a target nucleotide sequence, as recited in independent claims 1, 8, 13 and 17. This statement is found unpersuasive as Fujimiya et al. disclose a dynamic operation unit for determining the degree of similarity between the target data and the key data by utilizing base sequence data of each (abstract), grouping homologous sequences, and retrieving the homologous gene sequence (col. 1, fifth paragraph and col. 2, second paragraph) using dynamic programming for determining the optimal solution as a whole using insertions, deletions, and substitutions for the first to last combinations of data (col. 2, last paragraph, col. 3, third and fourth paragraphs, and Figures 7a and 7b) as well as displaying maximal values of each target data in the order of higher degrees of similarity (col. 23, third paragraph) and probe binding evaluation (col. 2, second and third paragraphs) which represents an evaluation processing unit for evaluating a binding possibility of the target nucleotide sequence data and complementary sequence data in descending order of edit distance of binding precision, as stated in instant claims 1, 8, 13, and 17. In addition, Fujimiya et al. disclose

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preparing a gene probe on the basis of the gene having high retrieval accuracy and analyzing and determining the binding possibility of the probe on the involved gene on a chromosome (col. 2, second and third paragraphs). Applicant further argues that Fujimiya et al. fail to disclose the storing of a maximum acceptable edit distance of binding precision between a target nucleotide sequence and a probe nucleotide sequence, as recited in independent claims 8, 13 and 17. This statement is found unpersuasive as Fujimiya et al. disclose a system including storage of data and a similarity degree whereby the score value at the initial condition is set to zero given the condition in which the maximal length α of the sequence is inserted or lost at one time involving partial sequences as well as setting α to 1 to get a maximal score value (col. 4, last paragraph, and col. 5, and abstract) which represents a maximum edit distance storing unit. Furthermore, Fujimiya et al. disclose setting a maximal value as a score of the node and applied to the origin and subsequent lattice points until finishing the basic operation and determining the wholly optimal disposition of the three routes (col. 5, last paragraph to col. 6, second paragraph) as well as adding a score value for each route, including target-side data and key-side data, (col. 5, last paragraph; col. 10; and Figures 7 and 8) which represents reading out each target nucleotide sequence data, complementary sequence data, and each maximum acceptable edit distance, as stated in instant claims 8, 13, and 17. Applicant's arguments are deemed unpersuasive for the reasons given above.

Conclusion

No claim is allowed.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR §1.6(d)). The Central Fax Center number for official correspondence is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carolyn Smith, whose telephone number is (571) 272-0721. The examiner can normally be reached Monday through Thursday from 8 A.M. to 6:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, can be reached on (571) 272-0735.

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June 7, 2007

/Carolyn Smith/
Primary Examiner
AU 1631